



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,547	10/21/2003	Percy Van Crocker	083847-0198	9313

22428 7590 01/26/2006  
FOLEY AND LARDNER LLP  
SUITE 500  
3000 K STREET NW  
WASHINGTON, DC 20007

EXAMINER

RUGGLES, JOHN S

ART UNIT	PAPER NUMBER
----------	--------------

1756

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/689,547	<b>Applicant(s)</b> CROCKER ET AL.	
	<b>Examiner</b> John Ruggles	<b>Art Unit</b> 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10/25/05, 10/13, 7/21, 5/20/04, & 10/21/03.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-97 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-97 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

It is noted that in each of claims 37-39, the phrase "the subtracting of material" lacks proper antecedent basis. However, for the purpose of this Office action and in order to advance the prosecution of this application, each of claims 37-39 have been interpreted as depending on claim 36 (which provides the needed antecedent basis for the above phrase), instead of depending on claim 1.

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-73 and 79-82, drawn to methods (first processes) of repairing or making masks (e.g., radiation masks for imaging (in class 430, subclass 5), nanoimprint molds for shaping (by deposition in class 427, subclass 133 or involving subtraction of material by etching in class 216, subclass 11 or 12), etc.).
- II. Claims 74-78 and 84-95, drawn to masks (first products, e.g., radiation masks for imaging (in class 430, subclass 5 or in class 378, subclass 35), nanoimprint molds for shaping (in class 425, subclass 470), etc.) repaired or made by deposition.
- III. Claim 83, drawn to a method (second process) of inspecting and repairing an object by selective coating, classified in class 427, subclass 8.
- IV. Claims 96-97, drawn to nanostructures (second products) having specified physical dimensions having heights of at least 100 nm, classified in class 428, subclass 220.

Inventions I and II are related as processes of repairing or making and products repaired or made. The inventions are distinct if either or both of the following can be shown: (1) that the

Art Unit: 1756

processes as claimed can be used to repair or make another and materially different product or (2) that the products as claimed can be repaired or made by another and materially different process (MPEP § 806.05(f)). In the instant case, the first processes as claimed in Group I can be used to repair or make another and materially different product than the first products as radiation masks for imaging or nanoimprint molds for shaping of Group II, such as repairing or making either a coating mask or an etching mask.

Inventions I and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, the different inventions of Groups I and III are not disclosed as capable of use together and have different functions. The first processes of Group I involve repairing or making masks by deposition and optional etching (without prior inspecting of an object), while the second process of Group III requires inspection of an object before repairing by selective coating (but without making or repairing masks involving subsequent etching).

Inventions I and IV are related as processes of repairing or making and products repaired or made. The inventions are distinct if either or both of the following can be shown: (1) that the processes as claimed can be used to repair or make another and materially different product or (2) that the products as claimed can be repaired or made by another and materially different process (MPEP § 806.05(f)). In the instant case, the first processes as claimed in Group I can be used to repair or make another and materially different product than the second products as nanostructures having specified physical dimensions having heights of at least 100 nm in Group

Art Unit: 1756

IV, such as radiation masks for imaging or nanoimprint molds for shaping that have different nanostructure dimensions having heights of less than 100 nm.

Inventions III and II are related as process of repairing (or making) and products repaired (or made). The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to repair (or make) another and materially different product or (2) that the products as claimed can be repaired (or made) by another and materially different process (MPEP § 806.05(f)). In the instant case, the second process as claimed in Group III can be used to inspect and repair (or make) another and materially different object or product than the first products as radiation masks for imaging or nanoimprint molds for shaping of Group II, such as inspecting and repairing a different object (e.g., a semiconductor device, etc.) that is not a mask.

Inventions II and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, the different inventions of Groups II and IV are not disclosed as capable of use together and have different functions. The first products of Group II are masks (e.g., radiation masks for imagery, nanoimprint masks as molds for shaping, etc.), while the second products of Group IV are nanostructures having specified physical dimensions (e.g., semiconductor device features, etc.) having heights of at least 100 nm that are not capable of use as masks having feature heights of less than 100 nm.

Inventions III and IV are related as process of repairing (or making) and products repaired (or made). The inventions are distinct if either or both of the following can be shown:

Art Unit: 1756

(1) that the process as claimed can be used to repair (or make) another and materially different product or (2) that the products as claimed can be repaired (or made) by another and materially different process (MPEP § 806.05(f)). In the instant case, the second process as claimed in Group III can be used to inspect and repair (or make) another and materially different object or product than the second products as nanostructures having specified physical dimensions having heights of at least 100 nm in Group IV, such as inspecting and repairing a different object (e.g., a semiconductor device, etc.) having different nanostructure dimension heights of less than 100 nm.

This application further contains claims directed to the following patentably distinct species of the claimed invention: (A) methods of repairing or making radiation masks, in which the radiation mask is (1) a binary radiation mask (e.g., in claim 2, etc.), (2) a phase shifting photomask (PSM, e.g., in claim 3, etc.), (3) an ion projection lithography mask, (4) an electron projection lithography mask, (5) an EUV lithography mask, or (6) an x-ray lithography mask (e.g., in claim 4, etc., classified in class 430, subclass 5); (B) methods of repairing or making nanoimprint masks as molds for shaping, in which the nanoimprint molds are repaired or made by either (7) deposition alone (classified in class 427, subclass 133, e.g., in claim 5, etc.) or (8) deposition and subtraction of material by etching (classified in class 216, subclasses 11 or 12, e.g., in claim 36, etc.); or (C) product masks that are either (9) radiation masks for imagery (classified in class 430, subclass 5 or in class 378, subclass 35) or (10) nanoimprint masks as molds for shaping (classified in class 425, subclass 470).

Applicants are required under 35 U.S.C. 121 to elect a single disclosed specie for prosecution on the merits to which the claims shall be restricted if no generic claim is finally

Art Unit: 1756

held to be allowable. Currently, claims 1, 40, 47, 51, 61, 66, 79, and 81 are generic methods of repairing or making masks and claims 74-78 and 84-95 are generic mask products.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and also because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicants are advised that a reply to this requirement must include an identification of both the Group (selected from the Groups labeled I-IV above) and the specie (selected from the species numbered 1-10 above) that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, Applicants will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, Applicants must indicate which are readable upon the elected specie. MPEP § 809.02(a).

Should Applicants traverse on the ground that the species are not patentably distinct, Applicants should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Art Unit: 1756

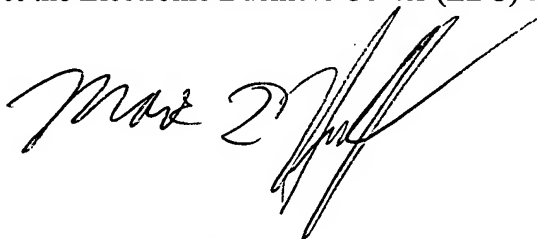
Applicants are also reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

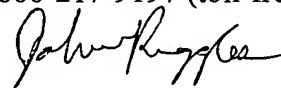
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Ruggles whose telephone number is 571-272-1390. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



  
John Ruggles  
Examiner  
Art Unit 1756

MARK F. HUFF  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700